



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,565	12/27/2005	Takashi Shimizu	DK-US055304	8334
22919 7590 09/28/2007 GLOBAL IP COUNSELORS, LLP 1233 20TH STREET, NW, SUITE 700 WASHINGTON, DC 20036-2680			EXAMINER DUFF, DOUGLAS J	
			ART UNIT 3748	PAPER NUMBER
			MAIL DATE 09/28/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/562,565

Applicant(s)

SHIMIZU ET AL.

Examiner

Douglas J. Duff

Art Unit

3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 10, 14-18 and 20-24 is/are rejected.
- 7) ☒ Claim(s) 7-9, 11-13 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Art Unit: 3748

This Office Action is in response to Applicants' request for reconsideration dated 7/18/07.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-4, 10, 14-18, 20-22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masumoto (US 6062834) in view of Hill et al. (US 5720602). Regarding claim 1, Masumoto discloses a compressor comprising a cylindrical sealed container (9) to which an intake pipe (16) and a discharge pipe (15) are connected, a compression mechanism (1, 2, 3, 4) which compresses gas introduced from the intake pipe and discharges it into the sealed container (Fig. 1), a motor (8) connected to a drive shaft (7) of the compression mechanism and an elastic support member (10) that supports the compression mechanism and the motor (supporting in an axial direction, col. 4, lines 15-19), both of which are accommodated in the sealed container (Fig. 1), wherein the intake passage which passes through the compression mechanism in a radial direction thereof and which opens in an outer face of the compression mechanism is formed in the compression mechanism (Fig. 1), the intake pipe is arranged so as to face at a terminal end thereof (at 4c, Fig. 8) an opening part of the intake passage in the

Art Unit: 3748

outer face of the compression mechanism, one of a peripheral part of the intake passage (at 4c) in the outer face of the compression mechanism and a part of an inner face of the sealed container which faces the peripheral part (piece at end of 16, part of sealed container) serves as a sealed face (Fig. 8), and a sealing mechanism including a sealing member pressed against the sealed face (Fig. 8) for connecting the intake pipe and the intake passage (through end piece at 16) with each other is provided for sealing a gap (directly below end piece, Fig. 8) between the compression mechanism and the sealed container.

2. Masumoto fails to disclose the compressor being used as a scroll expander in which the compression process is reversed using the same structure to recover energy from rotation. Hill et al. discloses that it is apparent to use a scroll apparatus as a fluid pump or as an expander (col. 4, line 28). It would have been obvious for a person having ordinary skill in the art at the time the invention was made to utilize the scroll compressor of Masumoto et al. including the pipe 16 and corresponding structure shown in Fig. 8 to perform the intended use as a scroll generator.

3. Regarding claim 2, the modified Masumoto device discloses the compressor of claim 1, where the part of the inner face of the sealed container which faces the peripheral part of the intake passage in the outer face of the compression mechanism serves as the sealed face (4c, Fig. 8), an annular concave groove (in corner of passage 4c, Fig. 8) is formed so as to surround the opening part of the intake passage in the outer face of the compression mechanism, the sealing member is formed in a ring shape (Fig. 8), is fitted in the concave groove and is interposed between a bottom face

Art Unit: 3748

of the concave groove (outer diameter of groove) and the sealed face (face of end piece) so as to be deformed elastically and the concave groove and the sealing member compose the sealing mechanism (Fig. 8).

4. Regarding claim 3, the modified Masumoto device discloses the compressor of claim 2, where the sealing member is an O ring (col. 4, lines 65-67).

5. Regarding claim 4, the modified Masumoto device discloses the compressor of claim 2, where the sealing member is formed in a U-shape in section so as to be deformed in a thickness direction elastically (Fig. 8).

6. Regarding claim 10, the modified Masumoto device discloses the compressor of claim 1, wherein the sealed container includes a cylindrical shell extending vertically (Fig. 1), an upper head (top part of 9, Fig. 1) that blocks an upper end of the shell, and a lower head (9) that blocks a lower end of the shell, a lower end of the upper head (bottom side of top part of 9) is fitted inside the shell, and a stopper (5) that restricts the amount of displacement of the compression mechanism and the motor by being in contact with the lower end of the upper head (5 will stop axial displacement of compression mechanism and motor by being in contact with the bottom side of the top part of 9) is provided to the compression mechanism or the motor which are supported by the elastic support member (10).

7. Regarding claim 14, the modified Masumoto device discloses the compressor of claim 1, further comprising a differential pressure canceling mechanism (1d, Fig. 1) that makes intake gas pressure to work on the compression mechanism so as to reduce

pressing force by discharge gas within the sealed container which works on the compression mechanism towards the intake pipe (upward towards intake pipe).

8. Regarding claim 15, the modified Masumoto device discloses the compressor of claim 14, where the compression mechanism is composed of a rotary fluid machinery in which a compression chamber is formed between an inner peripheral face of a cylinder (1) and an outer peripheral face of a piston (2, 2b) and the differential pressure canceling mechanism makes the intake gas pressure to work on an outer face of the cylinder (top face) of the compression mechanism (Fig. 1).

9. Regarding claim 16, the modified Masumoto device discloses the compressor of claim 15, where the differential pressure canceling mechanism makes the intake gas pressure to work on a part opposite the intake passage (opposite side of 4 from intake passage) in the outer face of the cylinder (Fig. 1).

10. Regarding claim 17, the modified Masumoto device discloses the compressor of claim 15, where the differential pressure canceling mechanism includes an intake pressure chamber (between 11 and 12) formed between the inner face of the sealed container (upper part of 9) and the outer face of the cylinder (1) and a communication passage (1d) that allows the intake pressure chamber to communicate with the intake passage of the compression mechanism and gas pressure of the intake pressure chamber works on the cylinder (Fig. 1).

11. Regarding claim 18, the modified Masumoto device discloses the compressor of claim 17, where the communication passage (1d) of the differential pressure canceling mechanism is formed in the cylinder (1).

12. Regarding claim 20, the modified Masumoto device discloses a compressor comprising a cylindrical sealed container (9) to which an intake pipe (16) and a discharge pipe (15) are connected; a compression mechanism that compresses gas introduced from the intake pipe and discharges it into the sealed container; a motor (8) connected to a drive shaft (7) of the compression mechanism; and an elastic support member (10) which supports the compression mechanism and the motor, both of which are accommodated in the sealed container, wherein the compression mechanism has a cylindrical outer shape (Fig. 1), an intake passage (in 4, Fig. 8) opens in an outer peripheral face (4c) of the compression mechanism, the intake pipe (16) is arranged so that a terminal end thereof faces an opening part of the intake passage in the outer peripheral face of the compression mechanism (Fig. 8), and a sealing mechanism for forming a low-pressure space that communicates with the intake passage and the intake pipe is provided in a gap (below end piece of 16) between the outer peripheral face of the compression mechanism and an inner peripheral face of the sealed container which are face each other (Fig. 8).

13. Regarding claim 21, the modified Masumoto device discloses the compressor of claim 20, where at least one O ring (in 4c) is arranged around an entire perimeter of the outer peripheral face of the compression mechanism (encircles corner and face at 4c) at each side (encircles) of the opening part of the intake passage in the outer peripheral face of the sealing mechanism (Fig. 8).

14. Regarding claim 22, the modified Masumoto device discloses the compressor of claim 20, where the at least one concave groove (4c, up to corner of 4c) is formed

around an entire perimeter in the outer peripheral face of the compression mechanism at each side of the opening part of the intake passage (Fig. 8), the sealing mechanism includes the concave groove and a ring member in an annular shape (seal at 4c) a part of which is cut out (hollow O ring with one side cut to form U shape, Fig. 8) and which is fitted in the concave groove, and an outer peripheral face of the ring member is pressed against the inner peripheral face of the sealed container by restoring force of the elastically deformed ring member which expands naturally in a radial direction so that a gap (below end piece of 16) between the compression mechanism and the sealed container is sealed.

15. Regarding claim 24, the modified Masumoto device discloses the compressor of claim 20, where an oil return passage (1e) passing through the compression mechanism in an axial direction thereof is formed in the compression mechanism (Fig. 1).

16. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over the modified Masumoto device as disclosed in the rejection of claim 5 above and further in view of Herman (US 4055199). Regarding claim 5, the modified Masumoto device discloses the compressor of claim 1, where the sealed container includes a coupling member (end piece of 16) having a tip end face facing the peripheral part of the intake passage in the outer face of the compression mechanism and a base end to which the intake pipe is mounted, the peripheral part of the intake passage in the outer face of the compression mechanism serves as the sealed face, a tip end part of the coupling member is formed in a cylindrical shape and composes a cylindrical portion.

17. The modified Masumoto device fails to disclose the sealing member formed in a ring shape rectangular in section and fitted freely to the cylindrical portion, the sealing mechanism including a pressing member, as a spring or other type, for making pressing force to work on the sealing member so that a tip end face of the sealing member is in contact with the sealed face.

18. Herman discloses a pressure vessel where the sealing member (36) of a port is ring shaped and rectangular in section and is fitted freely to the cylindrical portion (30), including a spring (32) as a pressing member for making pressing force to work on the sealing member so that a tip end face of the sealing member is in contact with the sealed face (46, Fig. 3). It would have been obvious for a person having ordinary skill in the art at the time the invention was made to utilize a spring as a pressing member on the end face in order to provide a seal to the container which is flexible and responsive to expansion and contraction and eliminates the need for close machining tolerances on the seal face (col. 3, lines 1-15).

19. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Masumoto in view of Hill et al. as shown as applied to claim 22 above, and further in view of Draskovich (US 5544896). The modified Masumoto device discloses the compressor of claim 22, but fails to disclose the ring member made of metal.

20. Draskovich discloses a seal made of metal (Fig. 2). It would have been obvious for a person having ordinary skill in the art at the time the invention was made to utilize a seal made of metal in order to dissipate heat in the most efficient manner and resist deformation of the seal (col. 1, lines 40-43).

Art Unit: 3748

Allowable Subject Matter

21. Claims 7-9, 11-13 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

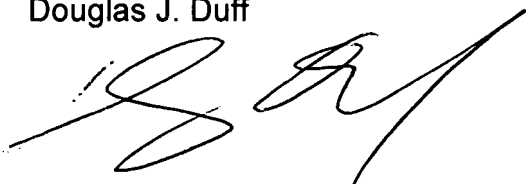
22. Applicant's arguments with respect to claim 1 and 20 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas J. Duff whose telephone number is (571) 272-3459. The examiner can normally be reached on M-F 7 AM - 5 PM.

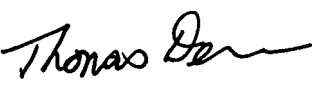
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Douglas J. Duff



4/18/07


THOMAS DENION
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700